

CS 2110 Final Exam Coding Question [12 points]: This question relies on the **BinaryTree** class we provide in Resources on Collab. The **BinaryTree** class describes the overall tree, and an inner **Node** class describes each node. There is only one (1) source file. This binary tree is NOT a binary search tree (BST), nor a heap. You will not need to add any methods or fields to the **BinaryTree** class.

Implement the **leaves(int target)** method in the inner **Node** class. This method should return the number of nodes in the binary tree that are:

- (1) a leaf node, AND
- (2) have a “value” greater than the “target”

This method must be recursive. The “target” value (int) is passed to the method as a parameter.

DO NOT edit the **leaves()** method in the **BinaryTree** class:

```
/**
 * BinaryTree version of leaves() method.
 * @param target
 * @return the number of leaves in the tree that has a value
 *         greater than the "target"
 */
public int leaves(int target) {
    if (this.root == null) { // If the BinaryTree is empty...
        return 0; // Then return zero (0) -- no nodes that meet the
                // criteria in an empty tree
    }
    return root.leaves(target); // Otherwise, call leaves() in Node class
}
```

Some things to keep in mind:

- **DOWNLOAD:** Download the **BinaryTree.java** file from Collab Resources (see “Final Exam” folder). This file contains both the **BinaryTree** class and the inner **Node** class. Do not modify anything inside the **BinaryTree** class. Create a new Java project on *Eclipse* and import the file.

- **SUBMISSION:** Once you have written your solution, **zip** it up and submit the **BinaryTree.java** file to **Web-CAT** (just like you have been doing all semester.) You will get feedback. You will see your score **out of 12 points** (*not* out of 100 points).

- **NUMBER OF SUBMISSIONS ON WEB-CAT:** Take note that **UNLIKE** homework assignments that you have submitted to Web-CAT in the past, the code you submit to Web-CAT for the final exam **WILL** be **LIMITED to THREE (3) submissions**. That is, you will be allowed to submit a maximum of **three (3)** times. This is because you can do unlimited tests on *Eclipse*. As soon as you pass all the JUnit tests on Web-CAT (12 out of 12 pts) you are *done!*

Best of luck! 😊